

**Claims:**

1. A method for determining the Volume Scattering Function (VSF) of ocean waters in backward direction using a satellite ocean color sensor, said method comprising the steps of:

5 (a) obtaining satellite view angle ( $\theta_{sat}$ ), solar angle ( $\theta_s$ ), remote sensed reflectance [ $Rrs(\theta_p, \lambda)$ ] and diffuse attenuation coefficient ( $K_d$ ) at each ocean pixel on a scaline using a satellite ocean color sensor;

(b) calculating corrected look angle of a pixel of satellite ocean color sensor on an ocean pixel using:

10 
$$\theta_p = \theta_{sat} + \sin^{-1}(0.113 \tan \theta_{sat}); \text{ and}$$

(c) calculating the Volume Scattering Function of ocean waters in the backward direction at a given wavelength [ $\beta(\psi, \lambda)$ ] using:

$$\beta(\psi, \lambda) = Rrs(\theta_p, \lambda) K_d [\cos \theta_s \cos \theta_p]$$

- 15 2. A method as claimed in claim 1, wherein the satellite ocean color sensors include CCD array detectors, ocean color monitors and SeaWifs Ocean color sensors.

3. A method as claimed in claim 1, wherein the detectors view a scan line of ocean pixels arranged along a swath of the ocean surface.

- 20 4. A method as claimed in claim 1, wherein the swath "W" of the satellite is about 1420 Kms.

5. A method as claimed in claim 1, wherein the about 3730 ocean pixels are covered  
25 in a satellite scan line.

6. A method as claimed in claim 1, wherein Instantaneous Field of View (IFOV) of an ocean pixel about 360 meters across track and about 250 meters along track.

- 30 7. A method as claimed in claim 1, wherein the Volume Scattering Function of ocean waters in the backward direction is dependent upon the wavelength ( $\lambda$ ).

8. A method as claimed in claim 1, wherein the Volume Scattering Function of ocean waters in the backward direction is obtained at a particular wavelength using appropriate wavelength dependent products of remote sensed reflectance and diffuse attenuation coefficient.

5 9. A method as claimed in claim 1, wherein the Volume Scattering Function of ocean waters in the backward direction is obtained at the wavelength of about 490 nm.

10 10. A method as claimed in claim 1, wherein the method can be extended to contiguous scan lines along the satellite track to generate a high resolution two dimensional volume scattering surface at fixed backscattering angles.

15 11. A method as claimed in claim 1, wherein the method can be extended to create a set of two dimensional volume scattering surfaces in several different visible bands by the satellite ocean color sensor.